

EVOLUTION – ORGANIC EVOLUTION - II

1. Correct order is:
 - (a) Palaeozoic → Mesozoic → Coenozoic
 - (b) Mesozoic → Archaeozoic → Proterozoic
 - (c) Palaeozoic → Archaeozoic → Coenozoic
 - (d) Archaeozoic → Palaeozoic → Proterozoic
2. Arrange the periods of Palaeozoic era in ascending order in a geological time scale:
 - (a) Cambrian → Ordovician → Silurian → Devonian Carboniferous → Permian
 - (b) Cambrian → Devonian → Ordovician → Silurian → Carboniferous → Permian
 - (c) Cambrian → Ordovician → Devonian → Silurian → Carboniferous → Permian
 - (d) Silurian → Devonian → Cambrian → Ordovician → Permian → Carboniferous
3. Identify the correct chronological sequence periods of Palaeozoic and Mesozoic era:
 - (a) Cretaceous → Permian → Jurassic → Carboniferous → Triassic
 - (b) Cretaceous → Carboniferous → Permian → Triassic → Jurassic
 - (c) Carboniferous → Permian → Triassic → Jurassic → Cretaceous
 - (d) Carboniferous → Jurassic → Permian → Triassic → Cretaceous
4. The largest subdivision in geological time-scale is:
 - (a) Era
 - (b) Period
 - (c) Epoch
 - (d) Century
5. Archaeozoic era is considered as the age of:
 - (a) Fishes
 - (b) Protists
 - (c) Marine life
 - (d) Amphibians
6. Palaeozoic is the era of:
 - (a) fishes
 - (b) birds
 - (c) mammals
 - (d) reptiles
7. Which of the following is called 'age of fish'?
 - (a) Silurian
 - (b) Permian
 - (c) Devonian
 - (d) Cretaceous
8. Ancestral amphibians were tetrapods that evolved during:
 - (a) Devonian period
 - (b) Jurassic period
 - (c) Carboniferous period
 - (d) Cretaceous period
9. Amphibians were dominant during:
 - (a) Carboniferous
 - (b) Silurian
 - (c) Ordovician
 - (d) Cambrian
 - (e) Jurassic
10. The coal beds of the present time were formed during:
 - (a) Devonian
 - (b) Triassic
 - (c) Carboniferous
 - (d) Permian

11. Mesozoic era is the age of:
 - (a) birds
 - (b) fishes
 - (c) reptiles
 - (d) mammals
12. Dinosaurs were:
 - (a) first mammals
 - (b) extinct reptiles
 - (c) giant mammals
 - (d) first amphibians
13. If you want to see a dinosaur, it would be best to set the controls of your time machine for the:
 - (a) Mesozoic era
 - (b) Precambrian era
 - (c) Palaeozoic era
 - (d) Pleistocene period
14. In which of the following periods dinosaurs were maximum developed?
 - (a) Mesozoic
 - (b) Coenozoic
 - (c) Palaeozoic
 - (d) Proterozoic
15. Dinosaurs disappeared during:
 - (a) Jurassic
 - (b) Triassic
 - (c) Permian
 - (d) Cretaceous
16. Golden age of reptile was:
 - (a) Mesozoic era
 - (b) Coenozoic era
 - (c) Palaeozoic era
 - (d) Proterozoic era
17. A flying reptile was:
 - (a) Pterosaur
 - (b) Plesiosaur
 - (c) Brontosaurus
 - (d) Ichthyosaur
18. Ancestors of mammals belongs to:
 - (a) Chelonia
 - (b) Siluridea
 - (c) Therapsida
 - (d) Ornithischia
19. Fossil record is most complete in:
 - (a) man
 - (b) apes
 - (c) primates
 - (d) horse
20. The earliest known ancestor of the present day horse was:
 - (a) *Equus*
 - (b) *Eohippus*
 - (c) *Mesohippus*
 - (d) *Merychippus*

21. Match the Era listed under Column I with the events given under Column II; choose the answer which gives the correct combination of the alphabets of the two columns:
- | Column I (Era) | Column II (Event) |
|----------------|---|
| A Proterozoic | p Major radiations of flowering plants, insects, birds, mammals, emergence of human forms |
| B Palaeozoic | q Major radiations of dinosaurs, origin of flowering plants and mammals |
| C Mesozoic | r Rise of early plants on land, origin of amphibians and origin of reptiles |
| D Cenozoic | s Origin of protists, fungi and animals |
- (a) A = s, B = q, C = r, D = p
 (c) A = r, B = s, C = p, D = q
 (b) A = s, B = r, C = q, D = p
 (d) A = r, B = q, C = s, D = p
22. Which of the following matches an event in the history of life with the correct geological era?
- (a) *First mammal* — *Precambrian*
 (b) *Appearance of humans* — *Mesozoic*
 (c) *Dominance of dinosaurs* — *Cenozoic*
 (d) *Movement of plants and animals onto land* — *Palaeozoic*
23. Mass extinction at the end of Mesozoic era was probably due to:
- (a) Continental drift
 (b) Massive glaciations
 (c) Change in Earth's orbit
 (d) The collision of Earth with large meteorites
24. Evolution of unique groups of mammals in South America, Africa and Australia is an evidence for:
- (a) glaciation
 (b) continental drift
 (c) crustal movement
 (d) geographical juxtaposition
25. Lamarck was a:
- (a) French naturalist
 (b) German biologist
 (c) British evolutionist
 (d) American biochemist
26. The book "*Philosophie Zoologique*" was written by:
- (a) Hugo de Vries
 (b) Lamarck
 (c) Mendel
 (d) Haeckel
27. The basis of Lamarckism is:
- (a) reduction of organ
 (b) effect of metabolism
 (c) effect of environment
 (d) development of organ
28. Lamarck's theory of evolution is called:
- (a) Inheritance of acquired characters
 (b) Theory of special creation
 (c) Survival of fittest
 (d) None of the above
29. Which of the following is a true statement about Lamarck?
- (a) He was first to realize that Earth is billion of years old
 (b) He worked out the principles of population genetics
 (c) He based his theory on the inheritance of acquired characters
 (d) He proposed natural selection as mechanism of evolution

30. Which of the following is not a concept of Lamarck?
- (a) Inheritance of acquired character
 - (b) Environmental pressure causes variation
 - (c) Rate and survival of organism is different due to variation
 - (d) If an organ is used constantly it will continuously increase its size
31. The theory of use and disuse of organs was given by:
- (a) Lamarck
 - (b) Darwin
 - (c) Weismann
 - (d) Hugo de Vries
32. Which of the following resulted in the erosion of Lamarck's concept of inheritance of acquired characters?
- (a) Mendelism
 - (b) Theory of germplasm
 - (c) Theory of natural selection
 - (d) Modern synthetic theory of evolution
33. A young couple lost their lower limbs in an accident; their children will be having:
- (a) normal and well developed limbs
 - (b) well developed lower limbs
 - (c) undeveloped lower limbs
 - (d) none of the above
34. "Theory of Continuity of Germplasm" was propounded by:
- (a) Darwin
 - (b) Lamarck
 - (c) Gregor Mendel
 - (d) August Weismann
35. Weismann cut off tails of mice generation after generation but tails neither disappeared nor shortened showing that:
- (a) Darwin was correct
 - (b) Mutation theory is wrong
 - (c) Tail is an essential organ
 - (d) Lamarckism was wrong in inheritance of acquired characters
36. Giraffe has long neck because:
- (a) due to evolution and adaptation
 - (b) their ancestors were long necked
 - (c) environment is suitable for its long neck
 - (d) they have become long due to their need from past
37. Lamarckian evolution could occur:
- (a) if each gene had only one allele
 - (b) if individuals had different phenotypes
 - (c) if the phenotype was altered by the environment
 - (d) if the genotypes was altered by the same environmental changes that altered the phenotype
38. Which of the following is not a concept of Lamarck?
- (a) Environmental pressure causes variation
 - (b) Rate and survival of organism is different due to variation
 - (c) Inheritance of acquired character
 - (d) If an organ is used constantly it will continuously increase its size
39. Natural selection theory was proposed by Darwin along with:
- (a) Wallace
 - (b) Mendel
 - (c) Morgan
 - (d) Lamarck

40. The idea of natural selection as the fundamental process of evolutionary changes was reached:
- (a) by Charles Darwin in 1866
 - (b) by Alfred Russel Wallace in 1901
 - (c) independently by Charles Darwin and Alfred Russel Wallace in 1859
 - (d) independently by Charles Darwin and Alfred Russel Wallace in 1900
41. Whose bicentenary is the year 2009?
- (a) Darwin
 - (b) Edward Jenner
 - (c) Stanley Miller
 - (d) T.H. Morgan
42. Darwin travelled in which ship?
- (a) H.N.S. Eagle
 - (b) Titanic
 - (c) H.M.S. Beagle
 - (d) D. Matrica
43. The main point of Darwin's theory is:
- (a) variation
 - (b) mutation
 - (c) enormous fertility
 - (d) natural selection
44. The Galapagos Islands were associated with:
- (a) Jean Lamarck
 - (b) Charles Darwin
 - (c) Alfred Wallace
 - (d) Gregor Mendel
45. Which of the following is not a part of Darwin's theory of evolution?
- (a) Genetic drift
 - (b) Natural selection
 - (c) Survival of the fittest
 - (d) Struggle for existence
46. Survival of fittest is possible due to:
- (a) overproduction
 - (b) favourable variations
 - (c) environmental changes
 - (d) inheritance of acquired characters
47. Darwin was influenced by reading the essays of
- (a) Wallace
 - (b) Spencer
 - (c) Mendel
 - (d) Malthus
48. The concept that 'population tends to increase geometrically while food supply increases arithmetically' was put forward by:
- (a) Stuart Mill
 - (b) Adam Smith
 - (c) T.R.Malthus
 - (d) Charles Darwin
49. Who wrote the book 'The Origin of Species'?
- (a) Mendel
 - (b) Wallace
 - (c) Lamarck
 - (d) Darwin

50. The book 'The Origin of Species' was published in:
(a) 1809
(b) 1859
(c) 1858
(d) 1956
51. One of the several objections to natural selection theory of Darwin is:
(a) struggle for existence
(b) continuity of germplasm
(c) inheritance of acquired characters
(d) many animals possess characteristics without utility and those that are positively harmful
52. Which one provides correct sequence of events in origin of species according to Darwinism?
1. Natural selection.
2. Variations and their inheritance.
3. Survival of fittest.
4. Struggle for existence.
(a) 1, 2, 3, 4
(b) 2, 4, 3, 1
(c) 4, 2, 3, 1
(d) 2, 3, 1, 4
53. Darwin proposed that new species evolve from ancestral forms by the:
(a) gradual accumulation of adaptations to changing environment
(b) inheritance of acquired adaptation to the environment
(c) struggle for limited resources
(d) accumulation of mutations
54. As per Neo-Darwinism, which is mainly responsible for evolution?
(a) Mutation
(b) Natural selection
(c) Both (a) and (b)
(d) None of these
55. Neo-Darwinism is:
(a) Population theory
(b) Natural selection theory
(c) Modern mutation theory
(d) Modern synthetic theory
56. Struggle for existence and survival of fittest are related to:
(a) Darwinism
(b) Mendelism
(c) Lamarckism
(d) Oparin's theory
57. Diversity in the types of beaks of finches adapted to different feeding habits on the Galapagos Islands, as observed by Darwin provides evidence for:
(a) intraspecific variations
(b) interspecific competition
(c) intraspecific competition
(d) origin of species by natural selection
58. Who postulated the mutation theory?
(a) G. Mendel
(b) Charles Darwin
(c) J.B. de Lamarck
(d) Hugo de Vries
(e) A Weismann

59. Hugo de Vries gave his mutation theory on organic evolution while working on:
- (a) *Althea rosea*
 - (b) *Pisum sativum*
 - (c) *Oenothera lamarckiana*
 - (d) *Drosophila melanogaster*
60. To be a successful event for evolution, a mutation must occur in:
- (a) Somatic RNA
 - (b) Plasma proteins
 - (c) Germplasm DNA
 - (d) Somatoplasm DNA
61. According to the theory of mutation by Hugo de Vries:
- (a) only small mutation takes part in variation
 - (b) only large mutation takes part in variation
 - (c) both small and large mutations cause variation in species
 - (d) none of the above
62. The most accepted and recent theory of organic evolution is:
- (a) Lamarckism
 - (b) Darwinism
 - (c) Theory of isolation
 - (d) Synthetic theory
63. Modern theory of organic evolution is based on:
- (a) mutation
 - (b) population
 - (c) isolation
 - (d) all of these
64. The modern synthetic theory of evolution is based on:
- (a) genetic and chromosomal mutation
 - (b) genetic recombination and natural selection
 - (c) reproductive isolation
 - (d) all of the above
65. The raw material for organic evolution is:
- (a) asexual reproduction
 - (b) mutation
 - (c) nutritive substances
 - (d) effect of hormones
66. Ultimate source of organic variation is:
- (a) mutation
 - (b) natural selection
 - (c) asexual reproduction
 - (d) hormonal action
67. Each of us is part of the ongoing evolution of the human species. Which of the following occurrences would have the greatest impact on the future biological evolution of the human population?
- (a) A mutation occurs in one of your sperm or egg cells
 - (b) You do exercise every day so that you stay physically fit and healthy
 - (c) You move to Kerala, the state of highest medical facilities and literacy
 - (d) You encourage your children to develop their intellectual abilities
68. Who provided experimental evidence for 'selection' in bacteria using replica plating technique?
- (a) Lederberg
 - (b) Louis Pasteur
 - (c) Joseph Lister
 - (d) Charles Darwin

69. Some bacteria are able to grow in streptomycin containing medium due to:
- (a) genetic drift
 - (b) natural selection
 - (c) induced mutation
 - (d) reproductive isolation
70. Total collection of genes at any time in a unit of evolution is:
- (a) gene bank
 - (b) gene library
 - (c) genome
 - (d) gene pool
71. At a particular locus, frequency of 'A' allele is 0.6 and that of 'a' is 0.4. What would be the frequency of heterozygotes in a random mating population at equilibrium?
- (a) 0.36
 - (b) 0.48
 - (c) 0.16
 - (d) 0.24
72. Presence of recessive trait is 16%. The frequency of dominant allele in population is:
- (a) 0.6
 - (b) 0.32
 - (c) 0.84
 - (d) 0.92
73. Hardy and Weinberg principle explains:
- (a) genetic equilibrium
 - (b) non-random mating
 - (c) evolutionary force
 - (d) all of these
74. The principle that gives the geneticists a tool to determine when evolution is occurring is:
- (a) Hardy-Weinberg principle
 - (b) Chemiosmotic theory
 - (c) Malthusian principle
 - (d) Cloning theory
75. Which of the following defines Hardy-Weinberg's law?
- (a) $p^2 + 3pq + q^2 = 1$
 - (b) $p^2 + 2pq + q^2 = 1$
 - (c) $p^2 + 2pq + q^2 = 0$
 - (d) $q^2 + p^2 + 2pq = 0$
76. Hardy-Weinberg equilibrium is known to be affected by gene flow, genetic drift, mutation, genetic recombination and:
- (a) saltation
 - (b) evolution
 - (c) limiting factors
 - (d) natural selection
 - (e) over production
77. Transfer of genes from one gene pool to another is called:
- (a) mutation
 - (b) gene flow
 - (c) speciation
 - (d) genetic drift
78. The chance of elimination of genes from a small population is an example of:
- (a) speciation
 - (b) adaptation
 - (c) genetic drift
 - (d) selection pressure

79. Genetic drift operates in:
- large isolated population
 - small isolated population
 - fast reproductive population
 - slow reproductive population
80. Match following evolution concepts in List I with List II and select the correct answer using the codes given below the lists:
- | List I | List II |
|---------------------|--|
| A Mutation | 1 Changes in population's allele frequencies due to chance alone |
| B Gene flow | 2 Differences in survival and reproduction among variant individuals |
| C Natural selection | 3 Immigration, emigration change allele frequencies |
| D Genetic drift | 4 Source of new alleles |
- A = 1, B = 2, C = 3, D = 4
 - A = 4, B = 2, C = 3, D = 1
 - A = 3, B = 1, C = 4, D = 2
 - A = 4, B = 3, C = 2, D = 1
81. A small isolated population is more likely to undergo speciation than a large one, because a small population:
- is more susceptible to gene flow
 - is more affected by genetic drift
 - contains a greater amount of genetic diversity
 - is more likely to survive in a new environment
82. One of the following is called Sewall Wright effect:
- isolation
 - gene pool
 - gene flow
 - genetic drift
83. In terms of gene frequencies, founder effect results in:
- polyploidy
 - hybridization
 - large, rapid changes
 - mechanical incompatibility
84. In natural selection:
- new mutations are generated over time
 - the genetic composition of the population changes at random over time
 - all individuals in a population are equally likely to contribute offspring to the next generation
 - individuals that possess particular heritable characteristics survive and reproduce at a higher rate than other individuals
85. Natural selection is sometimes described as "survival of the fittest". Which of the following most accurately measures an organism's fitness?
- Its mutation rate
 - How many fertile offspring it produces
 - How much food it is able to make or obtain
 - Its ability to withstand environmental extremes
86. Higher frequency of melanic British moths and DDT resistance in mosquitoes are cited as examples for:
- Genetic drift
 - Point mutation
 - Natural selection
 - Arrival of the fittest
87. Directional selection:
- works against adaptive traits
 - favours intermediate forms of a trait
 - eliminates uncommon forms of alleles
 - shifts allele frequencies in a steady, consistent direction

88. Disruptive selection:
- (a) eliminates uncommon forms of alleles
 - (b) does not favour intermediate forms of a trait
 - (c) shifts allele frequencies in a steady, consistent direction
 - (d) all of the above
89. Birds with average-sized wings survived a severe storm more successfully than with longer or shorter wings. This illustrates:
- (a) stabilizing selection
 - (b) gene flow
 - (c) diversifying selection
 - (d) founder effect
90. Industrial melanism was high lightened by:
- (a) Polar bear
 - (b) Rock python
 - (c) *Mimosa pudica*
 - (d) *Biston betularia*
 - (e) *Triticum aestivum*
91. The phenomenon of "Industrial melanism" demonstrates:
- (a) natural selection
 - (b) induced mutation
 - (c) reproductive isolation
 - (d) geographical isolation
92. The change of the lighter coloured variety of peppered moth, *Biston betularia*, to its darker variety (*carbonaria*) is due to:
- (a) deletion of a segment of genes due to industrial pollution
 - (b) mutation of single Mendelian gene for survival in smoke laden industrial environment
 - (c) industrial carbon deposited on the wings of the moth resulting in darker variety
 - (d) translocation of a block of genes in chromosomes in response to heavy carbons
93. Industrial melanism is an example of:
- (a) Drug resistance
 - (b) Darkening of skin due to industries
 - (c) Protective resemblance with the surrounding
 - (d) Defensive adaptation of skin against UV radiations
94. Some organisms escape detection from enemies by resembling other organisms. The phenomenon is termed:
- (a) mimicry
 - (b) homology
 - (c) natural selection
 - (d) artificial selection
95. Cause of mimicry is:
- (a) attack (offence)
 - (b) isolation
 - (c) protection (defence)
 - (d) all of these
96. Species is:
- (a) population of one type
 - (b) a group of interbreeding populations
 - (c) a group of individuals inhabiting a geographical area
 - (d) populations of individual having same genotypes and phenotypes
97. Geographic and reproductive isolations are most closely associated with:
- (a) speciation
 - (b) extinction
 - (c) succession
 - (d) competition
 - (e) over production

98. Sympatric speciation is:
- (a) the appearance of a new species in the same area as the parent population.
 - (b) emergence of many species from a single ancestor
 - (c) initiated by the appearance of a geographical barrier
 - (d) the process by which most animal species have evolved
99. A new species can arise in a single generation:
- (a) if allopatric speciation occurs
 - (b) through geographical isolation
 - (c) in a very large population that is spread over a large area
 - (d) if a change in chromosome number creates a reproductive barrier
100. Species that do not interbreed in nature are said to be:
- (a) sterile
 - (b) hybrids
 - (c) reproductively isolated
 - (d) geographically isolated
101. Which of the following evolutionary mechanisms acts to slow down or prevent the evolution of reproductive isolation?
- (a) Gene flow
 - (b) Mutation
 - (c) Genetic drift
 - (d) Natural selection
102. Reproductive isolating mechanisms:
- (a) reinforce genetic divergence
 - (b) prevent interbreeding
 - (c) prevent gene flow
 - (d) all of the above
103. The basis of evolution is
- (a) cell
 - (b) species
 - (c) individual
 - (d) population
104. Individuals of different species living in the same area may be prevented from interbreeding by responding to different mating dances. This is called:
- (a) temporal isolation
 - (b) ecological isolation
 - (c) behavioural isolation
 - (d) mechanical isolation
105. When the members of one population do not breed at the same time of the year as the members of another population it is called:
- (a) sexual isolation
 - (b) habitat isolation
 - (c) seasonal isolation
 - (d) geographic isolation
106. Which is not a pre-zygotic isolation mechanism?
- (a) Hybrid sterility
 - (b) Seasonal isolation
 - (c) Ecological isolation
 - (d) Geographical isolation
107. Which of the following is an example of postzygotic reproductive barrier?
- (a) One species of *Rana* mates in April, another mates in May
 - (b) Two pheasant species perform different courtship dances
 - (c) One species of flower grows in forested areas and another in meadows
 - (d) Two *Drosophila* of different species produce offspring that are sterile